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CONTENTS.

- | | |
|---|------------|
| 1. PROPER NUTRITION AT LOW COST, by T. Schulz | ... p. 291 |
| 2. MAN-POWER IN THE RECONVERSION PERIOD IN U.S.A.
AND U.K., by F. A. Burchardt | 303 |

PROPER NUTRITION AT LOW COST

Outlines of an inexpensive family diet in November 1945

Our tenth half-yearly survey of the cost of a 'human needs' diet in Oxford was undertaken in November 1945. We have again calculated the weekly cost of an inexpensive diet of reasonable variety for a family consisting of husband, wife, one child between 5 and 7, and two children between 7 and 12 years old. Thus, all three children would be entitled to milk at school, at a halfpenny for a third of a pint, but the family would not receive any cheap milk at home under the Government scheme.

From April 1945 to November 1945, the Ministry of Labour index of the cost of food had risen by 0.6 per cent, owing to the rise in the price of potatoes. Nevertheless the cost of our 'human needs' diet (diet A) has remained constant at 36s. 1½d. per week for the family of 5 persons, for the increase in the price of potatoes was more than counterbalanced by the seasonal fall in the prices of other vegetables, which are not included in the Ministry of Labour index. Indeed, if it were not for changes in the outlay on other foods, there would be a reduction of 6½ pence, exactly as much as the rise in the cost of potatoes. It will, however, be seen from Table I that this surplus is absorbed.

In calculating the outlay on diet A we have assumed a few items to be purchased in quantities larger than those shown in our diet schedule and carried over two or more weeks; this applies to jam, syrup, haricot

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TABLE I. *Weekly 'Human Needs' Diet for a Family of 5 Persons*

Diet A		Quantity	Price p. Unit ¹	Changes since April 1945	
			s. d.	Quantity	Outlay s. d.
(a) Rationed Foods :					
1	Meat	7 lb	10 ²	...	...
2	Bacon	15 oz.	1 9 ³	— 5 oz. —	2½
3	Margarine	1 lb 14 oz.	9	...	...
4	Lard	10 oz.	9	...	...
5	Sugar	3 lb 8 oz.	4	...	...
6a	Jam	4 oz.	1 0	...	...
6b	Syrup	1 lb	8 ⁴	...	...
7	Tea	8 oz.	2 8	...	...
8	Cheese	15 oz.	1 1	+ 5 oz. +	4
9a	Eggs, shell	1 egg	2	...	...
9b	Eggs, dried	1½ pkt. ⁵	1 3	...	...
10	Herrings, tinned	...	10	— 2 tins ¹⁰ —	1 8
11a	Lentils and Peas, split	1 lb	5	...	...
11b	Haricot Beans	1 lb 4 oz.	6	+ 4 oz. +	1½
12	Rolled Oats	2 lb 8 oz.	3½	...	...
13	Dried Fruit ⁶	12 oz.	9	+ 4 oz. +	2½
14	Household Milk	½ tin ⁷	9	— ⅔ tin —	3½
Outlay on Group (a)			18 4½	— 1	6½
(b) Liquid Milk :					
15a	Ordinary	14 pt.	4½	...	...
15b	School	7½ pt.	1½	...	...
Outlay on Group (b)			5 10½		...
(c) Unrationed Main Carbohydrate Foods :					
16	Bread	18 lb	2½	...	...
17	Flour	3 lb	3	...	+ 0½
18	Potatoes	21 lb	1 ⁸	...	+ 6
Outlay on Group (c) *			6 1½	+	6½
(d) Vegetables (excl. Potatoes) :					
19a	Swedes	3 lb 8 oz.	1½	...	} — 2½
19b	Carrots	3 lb 8 oz.	1½	...	
19c	Cabbage	7 lb	2½	...	
Outlay on Group (d)			2 3½	— 1	1
(e) Other Foods :					
20a	Macaroni	8 oz.	7½	...	...
20b	Semolina	1 lb 8 oz.	4	...	...
21	Cocoa	4 oz.	1 7 ⁹	...	+ 1½
22	Condiments	...	4	...	...
23	Cooking Apples	8 oz.	6	+ 8 oz. +	3
24	Herrings, fresh	2 lb	7	+ 2 lb +	1 2
25	Pork Sausage Meat	8 oz.	1 1	+ 8 oz. +	6½
Outlay on Group (e)			3 6	+ 2	0½
Total Outlay on Diet A			36 1½		...

¹ Eggs, in shell, price per egg ; dried eggs, price per packet ; tinned fish, price per tin ; household milk, price per tin ; other milk, price per pint ; condiments, total outlay ; all other foods, price per lb. ² Average price. ³ In April 1945, rashers of American bacon could be bought at 1/6 per lb. ⁴ Bought in 2 lbs container. ⁵ One packet equivalent to 12 shell eggs. ⁶ Seedless raisins, sultanas, stoned dates. ⁷ One tin equivalent to 4 pints of liquid skimmed milk. ⁸ 8d. for 7 lbs. ⁹ In April 1945, the price of the cheapest cocoa that was generally available was 1/2 a lb. ¹⁰ One tin containing 15 oz.

beans, and Household milk. We do not, however, suggest that potatoes and flour should be bought in bulk, although that would reduce their average prices, since a family with a small weekly income may not be able to do this and, moreover, may lack the necessary storage facilities.

Between April and November, the rations of bacon and cheese were altered, that of bacon being reduced from 4 to 3 ounces¹ and that of cheese being increased from 2 to 3 ounces,² per person per week. Household milk, which in April 1945 was no longer issued under the rationing scheme but could be bought freely in Oxford, since substantial stocks were left in the hands of the retailers, was again rationed in November, at a tin—equal to 4 pints of skimmed liquid milk—per ration book every eight weeks. Thus a family of 5 persons was able to obtain per week the equivalent of 2½ pints of skimmed milk in November, while in April we had allowed 4 pints of it in the weekly diet. Tinned herrings and pilchards were no longer plentiful and could be found only in some shops. We therefore omitted this item from our basic diet A and suggested instead the addition of 2 lbs of fresh herrings, 8 ounces of pork sausage meat—the cheaper beef sausage meat being almost unobtainable—and 4 ounces of haricot beans. Apples are in season in November, and we included in diet A 8 ounces of cooking apples and an additional 4 ounces of dried fruit, thus raising the total amount of dried fruit to 12 ounces, instead of improving the winter diet by 1 lb of cooking apples, as we suggested in November 1944. Cooking apples seem to be consumed mostly stewed with a little sugar, and only occasionally to be made up into dumplings or steamed pudding, or even apple tart. Yet it is essential that a sufficiency of calorific food should be offered to the children in an appetizing form, and puddings made with dried fruit are a good way of doing this.

The price of bacon rashers underwent no change from April to November, but cheap rashers at 1s. 6d. a lb were only occasionally to be had, and we therefore raised the price per lb in diet A to 1s. 9d. in November. The familiar brands of cocoa sold everywhere at 9½ pence for ½ lb, and in many shops no other cocoa was to be had, although in the centre of the town and in two outlying districts cocoa which made an excellent beverage was on sale at 1s. 2d. and 1s. 4d. a lb. In general the impression was gained that as a result of the relative shortage of goods housewives give preference to the higher priced foods, many being firmly convinced that a higher price always implies higher nutritional value. This attitude becomes especially obvious as regards the purchase of meat. To this point we shall return further below.

In some places cabbage was only sold at the maximum price of 3 pence a lb. In these instances the proportion of wastage was small, and since the nutritional values given in Table IV assume it to be 30 per cent of the total we felt justified in including in diet A 7 lbs at the cheaper price of 2½ pence a lb, which could be replaced by 5.8 lbs at 3 pence a lb with only 16 per cent wastage.

Diet A assumes that all the family's rations are bought, excepting only 4½ ounces of tea. Margarine is substituted for butter, and 2½ of the

¹ From May 27.

² From November 11.

'points' remain unused. The total expenditure of 'points' in diet A will be found in Table II. The number of 'points' available per week

TABLE II
Foods Rationed on 'Points' in 'Human Needs' Diet A

	Quantity	Points
Syrup	1 lb	8
Lentils and Peas	1 lb	2
Haricot Beans	1 lb 4 oz.	1½
Rolled Oats	2 lb 8 oz.	5
Dried Fruit	12 oz.	6
Total Points used		22½
Total Points available		25
Points left over		2½

had fallen from 6 to 5 per person, since May 27. In April, 24 'points' would have been needed for diet A, which included 2 tins of herrings, at 2 'points' a tin. In November, the herrings are omitted, but 2½ 'points' would be required for the additional purchases of 4 ounces of dried fruit and 4 ounces of haricot beans. Few housewives, however, would like to forgo the use of some of the 'points'; besides, most housewives, irrespective of their housekeeping money per head, are strongly disinclined to buy meat at as low a price as 10 pence a lb on the average, and additional 'points' foods may help to compensate for the smaller quantity of meat thus obtained per ration.¹

We have therefore suggested in Table III two modifications of diet A, calling these diet B and diet C. Both these diets utilize all the 'points' available to the family. From diet A is deducted 1 lb. 3 oz. of meat, so that the average price of meat is raised from 10 pence to a shilling a lb. The total outlay on it remains the same. We have further reduced diet A by 4 ounces of haricot beans, assuming that they would have been used with cheap stewing meat. In both diet B and diet C, the loss of meat is made good by fish, in the former by a tin of pilchards and in the latter by a lb of kippers. Additional calories are obtained in diet B from 9 ounces of bread and in diet C from 12 ounces of sweet biscuits. These latter may be considered a reasonable luxury for a family with young children. If, instead, bread were eaten, diet C would cost about 1½ pence more than diet B; but in that case the family would only spend 22 instead of 25 'points' per week. Biscuits were still scarce in Oxford, and people queued for them. Quite good ones could be bought at 10 pence a lb in all parts of the town, although not in all shops selling biscuits. Nevertheless, a housewife wanting biscuits rarely inquires after the price but rather considers the length of the queue and the time at her disposal. We have therefore assumed that she will have to pay on the average a shilling for a lb.

In general it was again possible for a particularly careful shopper to save a few pence on any of the three diets. Some housewives could

¹ 1s. 2d. worth per week.

TABLE III
Weekly Low Cost Diets for a Family of 5 Persons

		Diets B and C		'Points' Value
		Quantity	Outlay s. d.	
Diet A			36 1½	22½
<i>Excluding :</i>				
Meat	1 lb	3 oz.	... ¹	...
Haricot Beans		4 oz.	1½	½
(—)			1½	½
(1) <i>Including</i> (Diet B) :				
Pilchards, plain	1 tin		9	3
Bread		9 oz.	1½	...
(+)			10½	3
Total Outlay on Diet B			36 10½	25
(2) <i>Including</i> (Diet C) :				
Kippers	1 lb		10	...
Biscuits, sweet		12 oz.	9	3
(+)			1 7	3
Total Outlay on Diet C			37 7	25

¹ No change in outlay: average cost of meat raised from 10d. to 1/- a lb.

obtain bacon at a lower price, and some could buy 2 lbs. of good plum jam at 1s. 10½ pence. But for these foods the housewife is tied to the retailer with whom she has registered. Foods that are rationed on 'points' may, however, be bought from any grocery shop. Of these foods, rolled oats could be found at 3 pence a lb, haricot beans at 5 pence a lb, and sultanas and stoned dates at 7½ pence a lb.

Since our last survey in April a *Memorandum* on 'Nutritive Values of War-time Foods' has been published as a White Paper.¹ For the present article we have made use of this publication, in lieu of the provisional data of war-time food values that we had obtained from the Ministry of Health. The figures underlying our main calculations of nutritional intake in this article are set out in Table IV. It shows the net values per ounce as purchased, i.e. the gross values of nutriment contained in any food item *minus* the average proportion of wastage, as given in the last column of Table IV. Protein is measured in grammes; calcium, iron, and vitamin C in milligrammes; vitamin B₁ in microgrammes;² vitamin A in International Units. In order to obtain the approximate total of vitamin A potency of a diet, the *Memorandum* suggests that the figures calculated for carotene (marked (c) in Table IV) should be divided by 3 before adding them to the values of pre-formed vitamin A, 'but it is stressed that this procedure is provisional and subject to revision'.³

¹ Medical Research Council War Memorandum No. 14 (H.M. Stationery Office).

² A millionth part of a gramme.

³ *Op. cit.*, p. 4.

TABLE IV

Nutritive Values of Foods

		Net Values per Unit as Purchased						Vita- min B, micro. gm.	Vita- min C mgm.	Deduct- tions made for Non- Edible Portion
	Unit	Calories	Protein gm.	Calcium mgm.	Iron mgm.	Vita- min A I.U. ⁴				
Meat ¹ *	oz.	60	3.4	2.0	0.7	12	20	—	—	—
Bacon, streaky	oz.	129	2.2	3.0	0.3	—	110	—	—	9%
Margarine	oz.	218	—	1.0	0.1	568	—	—	—	—
Lard	oz.	253	—	—	—	—	—	—	—	—
Sugar	oz.	108	—	—	—	—	—	—	—	—
Jam	oz.	71	0.1	3.0	—	6 (c)	1	0.6	—	—
Syrup	oz.	81	0.1	7.0	0.4	—	—	—	—	—
Cheese	oz.	117	7.1	230.0	0.2	369	9	—	—	—
Eggs, shell	egg	78	6.2	30.0	1.3	500	74	—	—	12%
Eggs, dried	egg	68	5.4	25.8	1.3	355	48	—	—	—
Herrings, tinned	oz.	55	6.0	28.0	0.4	9	—	—	—	—
Lentils and Peas ¹	oz.	83	6.7	12.3	1.7	43 (c)	128	—	—	—
Haricot Beans	oz.	71	6.1	51.0	1.9	—	128	—	—	—
Rolled Oats	oz.	111	3.4	16.0	1.2	—	128	—	—	—
Dried Fruit ¹ *	oz.	63	0.4	16.0	0.4	17 (c)	—	—	—	—
Household Milk	pint	194	20.4	696.0	0.6	18	222	4.0	—	—
Liquid Milk	pint	340	18.0	680.0	0.6	600 ⁵	260	6.0	—	—
Bread	oz.	70	2.4	17.0	0.3	—	42	—	—	—
Flour	oz.	98	3.4	23.0	0.5	—	69	—	—	—
Potatoes	oz.	16	0.4	2.0	0.1	—	26	4.0	25%	—
Swedes	oz.	4	0.2	10.0	0.1	—	7	7.0	35%	—
Carrots	oz.	5	0.2	11.1	0.1	4544 (c)	14	2.0	20%	—
Cabbage	oz.	5	0.3	13.0	0.2	179 (c)	15	14.0	30%	—
Macaroni	oz.	96	3.0	7.0	0.4	—	21	—	—	—
Semolina	oz.	96	3.0	5.0	0.3	—	26	—	—	—
Cocoa	oz.	125	5.8	14.0	4.1	43 (c)	34	—	—	—
Cooking Apples	oz.	8	0.1	1.0	0.1	9 (c)	10	1.0	20%	—
Herrings, fresh	oz.	23	2.7	17.0	0.3	26	2	—	40%	—
Pork Sausage Meat	oz.	73	3.0	9.0	0.3	—	48	—	—	—

¹ Average values.² The figures are given for cuts of low nutritional value, of beef and mutton.³ Seedless raisins, sultanas, stoned dates.⁴ A (c) after the figures in this column denotes carotene.⁵ From 400 to 800 I.U., depending on the feeding stuffs of the herd.⁶ According to cut.

A deduction of 15 per cent of the total content of vitamin B₁ of a diet is considered necessary so as to allow for losses of this vitamin through cooking. 'For vitamin C, the percentage loss during . . . domestic cooking may be taken as 75 for green vegetables and 50 for other vegetables, but with modern "conservative" cooking it will be less.'¹ None of these corrections for vitamin potency are included in Table IV; the adjustments there only allow for the presence of inedible matter in the particular food. We have, however, made all the suggested deductions for vitamins in calculating the data for Tables VII, VIII, and IX.

¹ *Ibid.*, p. 5.

The nutritional values given for meat in Table IV call for a brief explanation. They are somewhat vague approximations, made on the assumption that the housewife buys meat of a rather poor quality—not necessarily the result of buying 'cheap' meat.¹ Indeed, if she purchased all her meat ration in the form of imported breast of mutton, at 4d. a lb, she would obtain $2\frac{1}{2}$ times as much in quantity, while the increase in nutrients derived from meat would be as follows: calories 3.9 times; protein 2.1 times; calcium 3.8 times; iron 1.8 times; vitamin A 2.5 times; vitamin B₁ 4.9 times. On the other hand, for cheap stewing beef only, at 10d. a lb, the relative figures of nutritional values, as compared with the average figures used for diet A, would be: calories 0.6 times; protein 0.9 times; vitamin A 0.7 times; vitamin B₁ 0.7 times; for calcium and iron they would be unity. If it were possible for the family to obtain a double meat ration, and they spent the whole amount—11s. 8d.—on best frying steak, they would increase the nutritional values derived from meat in diet A by much less than by

TABLE V
Calories and Protein in 'Human Needs' Diet A

	Calories: % of Total		Proteins: % of Total	
	April 1945	November 1945	April 1945	November 1945
Bread and Flour	31.3	31.3	<i>Animal Protein:</i>	
Margarine and Lard	11.4	11.4	All Milk ³	15.7
Meat	8.5	8.5	Meat	14.1
Fresh Milk	8.1	8.1	Herrings, tinned	6.7
Sugar	7.6	7.6	All Eggs	3.2
Potatoes	6.8	6.8	Cheese	2.6
Rolled Oats	5.6	5.6	Bacon	1.6
Macaroni and Semolina	3.9	3.9	Herrings, fresh	—
Bacon	3.3	2.4	Sausage Meat	—
All Legumes ¹	3.1	3.5		
Jam and Syrup	2.0	2.0	<i>Vegetable Protein:</i>	
Herrings, tinned	2.0	—	Bread and Flour	31.7
Cheese	1.5	2.2	All Legumes ¹	7.6
All Eggs ²	1.4	1.4	Rolled Oats	5.0
Vegetables (<i>excl. Potat.</i>)	1.3	1.3	Potatoes	5.0
Household Milk	1.0	0.6	Macaroni and	
Herrings, fresh	—	1.0	Semolina	3.6
Sausage Meat	—	0.7	Vegetables (<i>excl.</i>	
All other foods	1.2	1.7	Potatoes)	2.1
			Cocoa	0.9
			All other foods	0.2
Total	100.0	100.0	Total	100.0

¹ Lentils, peas, haricot beans.

² One in shell and 15 dried eggs.

³ Including dried Household milk.

¹ The average values per oz. in the *Memorandum* for all cuts of meat are: beef, 66 calories, protein 4 gm, calcium 3 mgm, iron 1 mgm, vitamin A 12 I.U., vitamin B₁ 12 microgm; mutton and lamb, 73 calories, protein 3.4 gm, calcium 3 mgm, iron 0.5 mgm, vitamin A 12 I.U., vitamin B₁ 39 microgm.

TABLE VI
Calcium and Iron in 'Human Needs' Diet A

Calcium : % of Total			Iron : % of Total		
	April 1945	November 1945		April 1945	November 1945
All Milk ¹	50.6	47.0	Bread and Flour	24.3	23.8
Bread and Flour	19.4	19.3	Meat	17.2	16.9
Cheese	7.4	11.1	All Legumes ²	12.7	14.1
Cabbage	4.7	4.6	Rolled Oats	10.5	10.3
Swedes and Carrots	3.8	3.8	Potatoes	7.4	7.2
Herrings, tinned	2.7	—	Cabbage	4.9	4.8
Haricot Beans	2.6	3.3	All Eggs ²	4.5	4.5
Potatoes	2.2	2.2	Cocoa	3.6	3.5
Rolled Oats	2.1	2.1	All Milk ¹	3.0	2.8
All Eggs ²	1.3	1.3	Herrings, tinned	2.6	—
Meat	0.7	0.7	Swedes and Carrots	2.5	2.4
Lentils and Peas	0.6	0.6	Macaroni and Semolina	2.3	2.2
Macaroni and Semolina	0.6	0.6	Syrup	1.4	1.4
Dried Fruit	0.4	0.6	Bacon	1.3	1.0
Syrup	0.4	0.4	Dried Fruit	0.7	1.0
Bacon	0.2	0.1	Margarine	0.7	0.7
Herrings, fresh	—	1.8	Cheese	0.4	0.6
Sausage Meat	—	0.2	Herrings, fresh	—	2.1
All other foods	0.3	0.3	Sausage Meat	—	0.5
			Cooking Applies	—	0.2
Total	100.0	100.0	Total	100.0	100.0

¹ Including dried Household milk.

² One in shell and 15 dried eggs.

³ Lentils, peas, haricot beans.

spending *only half of it* and laying this money out on breast of mutton ; for the improvement would amount to this : calories, calcium, and iron, 1.5 times ; protein, vitamin A and vitamin B₁, 1.2 times. On the whole, beef is the least economical meat from the nutritional view-point, and mutton the most economical, if we compare cuts of similar culinary value.

The data for bread and flour in Table IV refer to calcium-fortified 'national' flour of 80 per cent extraction, as used in the ordinary loaf in 1945. For calcium-fortified flour of 85 per cent extraction—the 'national' flour of 1943—the figures are approximately the same for calories, protein, and calcium. For iron they would be about two-fifths and for vitamin B₁ nearly one-quarter above those given by us for bread and flour.

The relative net intake of nutriment from diet A is set out in Tables V, VI, and VII, Table V surveying the calorific intake and the intake of protein, Table VI that of the minerals calcium and iron, and Table VII that of the vitamins A, B₁, and C. These three Tables are arranged in such a way that nutriment derived from foods that are culinary as well as nutritional substitutes appears in one total : thus, dried Household milk can replace—or nearly replace—liquid full cream milk as regards its content of protein, calcium, iron, and vitamin B₁¹; under these

¹ Its content of vitamin B₁ is about 15 per cent below that of fresh full cream milk ; but this is of minor importance, since diet A contains an abundance of this vitamin.

TABLE VII
Vitamins A, B, and C in 'Human Needs' Diet A

Vitamin A : % of Total			Vitamin B ₁ : % of Total		
	April 1945	November 1945		April 1945	November 1945
Carrots	64.5	63.3	Bread and Flour	31.9	31.8
Margarine	13.0	12.7	Potatoes	18.1	18.0
Liquid Milk	8.7	8.5	All Milk ¹	12.1	11.3
Cabbage	5.1	5.0	Rolled Oats	10.6	10.6
All Eggs ²	4.4	4.3	All Legumes ³	8.5	9.5
Cheese	2.8	4.2	Carrots and Cabbage	5.1	5.1
Meat	1.0	1.0	Meat	4.6	4.6
Herrings, tinned	0.2	—	Bacon	4.6	3.4
Lentils and Peas	0.2	0.2	Macaroni and Semolina	1.6	1.6
Herrings, fresh	—	0.6	All Eggs ²	1.6	1.6
All other foods	0.1	0.2	Swedes	0.8	0.8
			Sausage Meat	—	0.8
			All other foods	0.5	0.9
Total	100.0	100.0	Total	100.0	100.0

Vitamin C : % of Total		
	April 1945	November 1945
Potatoes	46.4	46.4
Swedes and Cabbage	40.5	40.5
Liquid Milk	7.9	7.9
Carrots	3.9	3.9
Household Milk	1.1	0.7
Jam	0.2	0.2
Cooking Apples	—	0.4
Total	100.0	100.0

¹ One in shell and 15 dried eggs.

² Including dried Household Milk.

³ Lentils, peas, haricot beans.

headings, therefore, all milk is shown together. But as compared with full cream milk, Household milk is deficient in calorific value and in its content of vitamin A and vitamin C; hence for these items liquid milk is given separately. All vegetables in 'diet A'—excluding potatoes—maybe substituted for one another as far as calorific value and content of protein are concerned; cabbage, however, is a better source of calcium and iron than swedes and carrots, while carrots are much superior to all other vegetables in vitamin A potency. On the other hand, swedes and cabbage have about the same high net value of vitamin C potency, if we deduct 50 per cent for losses in cooking of swedes, and 75 per cent for those of cabbage.

Bread and flour are shown together in Tables V, VI, and VII, since, in proportion of about 3 to 4, they are perfect substitutes. Eggs in shell and dried eggs are also always given together, although dried eggs are a somewhat poorer source of nutrients, in particular of the vitamins A and B₁. Yet eggs in shell may be considered a luxury for a family with no infants, and we are here concerned essentially with the nutritional value of dried eggs.

TABLE VIII

Relative Outlay on, and Nutritional Intake from, 'Human Needs' Diet A

	Outlay		Calories	Protein ¹	Calcium	Iron	Vita- min A	Vita- min B ₁	Vita- min C	
<i>April 1945 :</i>										
Group (a)	55.0	48.0	{ 31.3 (a) }		27.6	52.6	21.7	32.0	1.3	
			{ 12.8 }							
Group (b)	16.3	8.1	{ 12.7 (a) }		41.7	2.5	8.7	10.2	7.9	
Group (c)	15.5	38.1	{ 36.7 }		21.5	31.6	—	50.0	46.4	
Group (d)	9.3	1.3	{ 2.1 }		8.5	7.4	69.6	5.9	44.4	
Group (e)	{ 3.0 }	4.5	{ 4.4 }	{ 0.7 }	5.9	—	1.9	—	—	
<i>excl. condiments</i>										
Condiments	0.9	—	{ — }		—	—	—	—	—	
Total	100.0	100.0	{ 100.0 }		100.0	100.0	100.0	100.0	100.0	
<i>November 1945 :</i>										
Group (a)	50.8	46.2	{ 24.9 (a) }		25.9	50.8	22.5	31.1	0.9	
			{ 14.0 }							
Group (b)	16.3	8.1	{ 12.9 (a) }		41.5	2.5	8.5	10.2	7.9	
Group (c)	17.0	38.1	{ 37.4 }		21.4	31.0	—	49.8	46.4	
Group (d)	6.3	1.3	{ 2.1 }		8.5	7.2	68.3	5.9	44.4	
Group (e)	{ 8.7 }	6.3	{ 4.2 (a) }	{ 2.7 }	8.5	0.7	3.0	0.4	—	
<i>excl. condiments</i>										
Condiments	0.9	—	{ — }		—	—	—	—	—	
Total	100.0	100.0	{ 100.0 }		100.0	100.0	100.0	100.0	100.0	

¹ An (a) after the figures in this column denotes protein derived from animal sources.

Tables V, VI, and VII, make impressively clear the importance of a properly 'mixed' diet; for only such a diet is likely to be a well-balanced one. For instance, a family that eats no carrots and substitutes for them, say, swedes, would thus forgo nearly two-thirds of the total content of vitamin A of the diet; or, if potatoes were largely replaced by bread and flour and few other vegetables eaten, the same proportion of vitamin C might be lost.

The relation between the cost of diet A and the nutritional intake obtained from it is pictured in some detail in Table VIII. It compares expenditure and the nutritional values obtained for it, for the several TABLE VIII here

groups, in April and November 1945. The substitution of unrationed sources of animal protein—herrings and sausage meat—for the 'points' rationed tinned herrings, has reduced all through the values of group (a) in November and increased those of group (e). Apart from this the differences are slight, except for the relative outlay in groups (c) and (d), which is affected by the substantial changes in the prices of potatoes and of other vegetables.

In Table IX the figures of nutritional intake from diet A are given per 'man' per day. The upper part of Table IX is headed 'Ministry of Health Scale'. Actually, only the 'man' values used in this section of Table IX were obtained from data supplied by the Ministry of Health, and the individual values from which these totals were compiled will be found in Table X.

TABLE IX

Nutritional Requirements and Nutritional Intake from 'Human Needs' Diet A

	'Man' Value of Family	Require- ments ¹ per Man	Intake per 'Man' per Day from Diet A	April 1945	Nov. 1945
<i>Ministry of Health Scale²:</i>					
Calories	3.73	3000		3040	3040
Protein, animal	4.43	70 gm.	{	38 gm.	36 gm.
Protein, vegetable				49 gm.	50 gm.
Calcium	7.13	0.8 gm.		0.6 gm.	0.6 gm.
Iron	5.40	10 mgm.		12 mgm.	12 mgm.
Vitamin A	5.00	3000 I.U.		3760 I.U.	3830 I.U.
Vitamin B ₁	4.68	0.3 mgm.		1.3 mgm.	1.3 mgm.
Vitamin C	5.00	30 mgm.		41 mgm.	41 mgm.
<i>Institute of Statistics Scale³:</i>					
Calories	3.75	3300		3300	3300
Protein, animal	3.75	50 gm.	{	51	51
Protein, vegetable				53	54

¹ Net values for the Ministry of Health scale, gross values for the Institute of Statistics scale.

² Food values based on the data in Table IV.

³ Food values compiled from a pre-war scale of gross values.

TABLE X

Individual Nutritional Requirements Expressed in 'Man' Values

	Age Group	Calories	Protein	Calcium	Iron	Vitamin A	Vitamin B ₁	Vitamin C
Male	21 and over	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Female	21 and over	0.83	0.86	1.00	1.00	1.00	0.83	1.00
Child	7—12	0.70	0.93	1.75	1.30	1.00	1.05	1.00
Child	3—7	0.50	0.71	1.63	0.80	1.00	0.75	1.00

The nutritional intake figures are based on the data in Table IV, *i.e.*, on the White Paper on 'Nutritional Values of War-time Foods', which has now replaced the provisional data previously employed by the Ministry. In order to make it possible to compare the basic data of nutritional intake with those in the early articles of this series, when, owing to the absence of generally recognized simple scales of 'man' values and nutritional values, we compiled scales of our own which were bound to be much less precise than those now at our disposal, we also continue this older set of data, under the heading 'Institute of Statistics Scale'. No further use, however, is made of these figures in this article and they are not referred to in any of the other Tables. It should be noted that the nutritional intake shown under the heading 'Institute of Statistics Scale' is expressed in gross values while under the heading 'Ministry of Health Scale' it is given in net values.

On the whole, the nutritional intake from diet A is satisfactory. There is, in fact, a fair margin of safety for all the nutrients, with the exception of calcium, of which the diet only supplies 75 per cent of the

optimum intake. With respect to this we can here only repeat what we have already pointed out in previous articles: first, that the deficiency of calcium intake is not a war-time phenomenon but was even more marked in the average pre-war family diet, owing to ignorance and bad dietary habits, and, secondly, that no general improvement in this respect is possible so long as milk and cheese remain scarce.

It may be thought that the 'surplus' amount obtained from diet A for most items of nutriment is rather large. Considering, however, that the family's food is distributed not by an expert dietitian but by a harassed housewife who tries to satisfy the various claims of each member of the family, such a surplus may be necessary if every member is to be reasonably assured of a sufficiency of nutriment. Only for vitamin B₁ is the supply probably larger than would be necessary to compensate for errors in the apportioning of the food. It results partly from the high content of vitamin B₁ in war-time bread and flour, which is more than three times that of its pre-war content.¹

In concluding it is perhaps useful to underline the fact that this diet can only be bought and cooked by a family, and that no simple division by a constant would serve to calculate from it the minimum cost of a satisfactory diet for a single person, whose problems of catering and cooking are essentially different from those of the housewife with a family. But our detailed analysis of food values shows not only that it is possible to provide for a family an inexpensive and yet well balanced diet but also indicates why inexpensive diets are so frequently anything but well balanced. A housewife may be a good cook and a careful housekeeper; in spite of this the family may be malnourished because of her ignorance of food values, or, indeed, because of the family's dislike of certain essential foods.

T. SCHULZ.

¹ No calcium was added to the pre-war bread and flour, and its content of this mineral therefore only amounted to about 17 per cent of that of our present day bread and flour.

MANPOWER IN THE RECONVERSION PERIOD IN U.S.A. AND U.K.

The following note attempts to piece together the actual and estimated changes in the labour market in the second half of 1945 in the United Kingdom and in U.S.A. The more rapid demobilization of the U.S.A. forces has so often been held out as an example, that it may be useful to look at the American reconversion scene more closely.

By the end of November the strength of the American Forces (Army and Navy) was reduced to about half its maximum strength of 11 million. Since VJ day 3 million men were demobilised and the rate of release at the end of November was about 50,000 a day, or about 1.5 million per month. This rate of demobilisation implies a decision about the extent of U.S.A. commitments overseas which, rightly or wrongly, have been taken as relatively smaller than those regarded as necessary by Great Britain. Quite apart from the decision about the minimum forces required for the first 6 months after VE-day, the actual rate of release was made possible by the very considerable transport facilities which the United States possessed and used as a matter of priority for repatriating her troops. Here again Britain was handicapped by the lack of passenger ship tonnage and could hardly have managed a proportionate rate of repatriation. But the relatively slow rate of British demobilisation can probably not be entirely explained by this factor. Between June and November the decrease in the armed strength of Britain amounted to about 850,000 or 17 per cent of the mid-1945 strength, while the corresponding decrease of U.S.A. forces was about 37½ per cent of the mid-1945 number. The difference is even greater if we take end-November daily rates of release, namely 10-12,000 in Britain against 50,000 in U.S.A.

TABLE I
Estimated Changes in the Utilisation of Manpower in U.S.A. and U.K.

	U.S.A.				
	Mid-1945	Sept.	Oct.	Nov.	Dec.
Forces	8.5	—	—	5.0	—
Munition industries ¹	8.2	5.5	—	4.4	—
Total civilian labour force	54.5	51.3	—	ca. 53.0	—
of which manfg. industry	14.5	12.0	—	—	—
Unemployed workers	0.9	1.8	—	—	—
	U.K.				(est.)
Forces	5.1	4.8	4.6	—	3.8
Metal and chemical industries ²	4.35	3.95	3.78	—	—
Total civilian labour force ³	16.21	15.98	15.90	—	16.04
Manufacturing industry	6.93	6.59	6.47	—	—
Unemployed Regist. Demob.	—	—	—	—	—
Unemployed Regist.	0.10	0.17	0.23	—	0.30
Demob. Leave ⁴	.04	0.26	0.36	—	0.38

¹ Includes metal using, rubber and selected chemical industries, and Government-operated navy yards and manufacturing arsenals.

² Group I Industries, see Ministry of Labour Gazette.

³ Numbers in Employment minus numbers in Forces and Auxiliary Services.

⁴ Men and Women on demobilisation leave who have not yet taken up employment and are not registered as unemployed.

American policy was more radical also in the reduction of munitions industries. The Manpower Commission estimates that in the ten days after VJ-day 1.8 million munition workers were laid off, and by the end of September the total had reached 2.7 million. These figures merely give the net changes in unemployed in the munition industries and not the numbers displaced from war work. The slowing down of the rate of fall in September and October is, in fact, a sign of the switch-over within the so-called munitions industries from war to civilian work, and it is expected that the gross displacement between September 1945 and July 1946 will be of the order of 1.5 to 2 million workers.

The total civilian labour force employed fell by about 2 million from mid-1945 to September 1945, mostly in manufacturing industries, with sharp cuts especially in aircraft and shipbuilding. But President Truman announced that by the end of November total employment was back at the VJ-day level which was, of course, already lower than that prevailing in May-June. The fall in employment was not fully reflected in unemployment figures because older people and female workers left their jobs without seeking re-employment; the number of demobilised men who have not yet returned to employment must also be considered; but no figures for this voluntary unemployment have been given in U.S.A. The number of unemployment compensation claims shot up from 300,000 to 1.7 million. During October and November unemployment is expected to have increased further and may reach 4 million at the beginning of December, but the official estimate of 8 to 10 million unemployed during the early winter is probably overshooting the mark very considerably.

British figures show the gross and net change in work done for the forces and in the civilian sector. They are not strictly comparable with the U.S.A. figures. It is probably best to compare the relative net change in the Group I industries for Britain with the corresponding change in 'munitions industries' in U.S.A.; the former amounted to about 10 % between mid-1945 and September 1945 (13 % up to October) and the latter to about 33 (and 42) per cent respectively. Cut-backs in munitions were clearly much more drastic in U.S.A. than in Great Britain. It is true that total work on supplies of the Forces was reduced in Britain by about 25 per cent, up to September, and by about 35 per cent up to October, but even these figures fall short of the percentage net releases in the American munition industries alone. Largely as a result of this, changes in the total civilian labour force and of labour employed in manufacturing industries seem to have been smaller in this country than in U.S.A. Withdrawals from the labour market were largely offset by demobilised men and women returning to employment.

A more adequate measure of the success of reconversion, namely the growth of employment for civilian production and exports, is available for Great Britain but unfortunately not for the United States. Employment in British manufacturing trades for civilian use at home and abroad expanded by about 30 per cent from mid-1945 to October. The U.S.A. expansion factor may be greater but it is doubtful whether it will be so much greater as is often assumed when the rates of demobilisation and of

TABLE II.
*Civilian Employment in Reconversion (U.K.)*¹

Employment (millions)	Mid-1945			Sept. 1945			October 1945		
	Forces ²	Civ. ³	Total	Forces ²	Civ. ³	Total	Forces ²	Civ. ³	Total
1. Metal and Chemical ind.	3.14	1.21	4.35	2.31	1.64	3.95	1.93	1.85	3.78
2. Other Manuf.	0.76	1.82	2.68	0.63	2.01	2.64	0.58	2.11	2.69
3. Total Manuf.	3.90	3.03	6.93	2.93	3.66	6.59	2.52	3.95	6.47
4. All other ind. and Services	—	—	9.28	—	—	9.39	—	—	9.43
5. Grand Total	—	—	16.21	—	—	15.98	—	—	15.91
6. of which Exports	—	—	0.50	—	—	0.70	—	—	0.80
Exports as % of :									
(a) total manuf.	—	—	7.0	—	—	11.0	—	—	12.0
(b) civ. manuf.	—	—	16.0	—	—	19.0	—	—	20.0
Civilian manuf. as % of total manuf.	—	—	44.0	—	—	55.0	—	—	61.0

¹ Source : Ministry of Labour Gazette.

² Number of civilians employed in producing equipment and supplies for Forces.

³ Employment for Home Civilian Manufacture and for Export.

displacements from munition work in the two countries are compared. In making comparisons it must, however, be remembered that the U.S.A. started from a higher *level* of civilian production and can therefore afford a smaller *rate* of expansion and that they need not worry about their balance of payments, while a rapid switch-over to exports is of prime importance for Britain in 1946. There is no completely unequivocal statement about the progress Britain has made in diverting manpower into export trades. But if we take employment in the "Direct Export Industries" as 400,000 in mid-1945 (Cmd. 6707) and add 25 per cent for 'indirect exports' and relate this figure to extra employment on exports given in the Man-Power Statements of the Ministry of Labour for September and October, we arrive at the series given in line 6 of Table II above. This calculation presupposes that the officially reported extra employment on exports represents net additions to the level obtaining in mid-1945. If this is correct, it would appear that employment for exports increased by about 60 per cent (*i.e.* more than twice as much as civilian production for the home market) in the 4-months period from June to October 1945.

F. A. BURCHARDT.

